Shiv Chhatrapati Shikshan Sanstha's

Rajarshi Shahu Mahavidyalaya, Latur

(Autonomous)

Curriculum

2024-2025

B. C. A.

(CC/AECC/SEC/GE)

UG Third Year Semester V & VI

Under CBCS

Three Year Degree Programme in B. C. A.

(Six Semester Course)

Syllabi approved by the Board of Studies in

B.C.A. with effect from June, 2019

Syllabus outline of B.C.A. Third Year V Semester
Under CBCS Pattern

Semester	Course Code	Course Name	Credits / Marks				Total	
			Internal		End Semester			
			Credit	Marks	Credit	Marks	Credit	Marks
Semester - V	**1. Skill Enhancement Course**							
	U-APR-614	Aptitude & Reasoning	--	20	--	30	2	50
	2. Discipline Specific Elective Course (Choose any four papers)							
	U-CON-615	Computer Networks	--	20	--	30	3	50
	U-RDB-616	Relational DBMS	--	20	--	30	3	50
	U-GPC-617	GUI Programming using C #	--	20	--	30	3	50
	U-CCT-618	Cloud Computing Technology	--	20	--	30	3	50
	U-ADJ-619	Advance Java	--	20	--	30	3	50
	U-PLC-620	Programming Language Concept	--	20	--	30	3	50
	ENVIRONMENTAL STUDIES (U-ENS-541) **(NCBC)**							
	3. Practical / Lab Course							
	U-LAC-621	Lab. Course - XVII	--	20	--	30	2	50
	U-LAC-622	Lab. Course - XVIII	--	20	--	30	2	50
	U-LAC-623	Lab. Course – XIX	--	20	--	30	2	50
	U-LAC-624	Lab. Course – XX	--	20	--	30	2	50
	U-LAC-625	Lab. Course – XXI	--	20	--	30	2	50
	U-LAC-626	Lab. Course – XXII	--	20	--	30	2	50
	MINI PROJECT	U-PRW-542	--	20	--	30	2	50
	SEMINAR	U-SEM-543	--	20	--	30	2	50
		Total (V)					**26**	**550**

Syllabus outline of B.C.A. Third Year VI Semester
Under CBCS Pattern

Semester	Course Code	Course Name	Credits / Marks				Total	
			Internal		End Semester			
			Credit	Marks	Credit	Marks	Credit	Marks
Semester – VI	**1. Skill Enhancement Course**							
	U-PDI-714	Personality Development & Interview Techniques	--	20	--	30	2	50
	2. Discipline Specific Elective Course (Choose any four papers)							
	U-WDA-715	Web Designing Using ASP.Net	--	20	--	30	3	50
	U-DIP-716	Digital Image Processing using Matlab	--	20	--	30	3	50
	U-DBA-717	Database Administration	--	20	--	30	3	50
	U-PYP-718	Python Programming	--	20	--	30	3	50
	U-DAM-719	Data Mining	--	20	--	30	3	50
	U-PWT-720	Programming with TypeScript	--	20	--	30	3	50
	3. Practical / Lab Course							
	U-LAC-721	Lab. Course - XXIII	--	20	--	30	2	50
	U-LAC-722	Lab. Course – XXIV	--	20	--	30	2	50
	U-LAC-723	Lab. Course – XXV	--	20	--	30	2	50
	U-LAC-724	Lab. Course – XXVI	--	20	--	30	2	50
	U-LAC-725	Lab. Course – XXVII	--	20	--	30	2	50
	U-LAC-726	Lab. Course – XXVIII	--	20	--	30	2	50
	U-PRW-641	Major Project	--	40	--	60	4	100
	Total (VI)						**26**	**550**
	Total (V + VI)						**52**	**1100**
	Total (I + II + III + IV+V+VI)						**144**	**3000**

Semester- V

Course Title: Aptitude and Reasoning
Course Code: U-APR-614

Total Lectures: 60 **Marks:50**
Credit:02

Learning objective

♣ Tests of General or Global Ability (also called "g", intelligence, IQ)

♣ Tests of Specific Cognitive abilities (Abstract Reasoning, Verbal Reasoning, Numerical Reasoning)

Course outcomes

♣ Aptitude and ability tests are designed to assess your logical reasoning or thinking performance. They consist of multiple choice questions and are administered under exam conditions. They are strictly timed and a typical test might allow 30 minutes for 30 or so questions.

Syllabus

UNIT - I

1. Quantitative Ability (Basic Mathematics)

- 1.1. Number Systems
- 1.2. LCM and HCF
- 1.3. Decimal Fractions
- 1.4. Simplification
- 1.5. Square Roots and Cube Roots
- 1.6. Average
- 1.7. Problems on Ages
- 1.8. Surds & Indices
- 1.9. Percentages
- 1.10 Problems on Numbers

UNIT – II

2. Quantitative Ability (Applied & Engineering Mathematics)

- 2.1. Logarithm
- 2.2. Permutation and Combinations
- 2.3 Probability
- 2.4 Profit and Loss
- 2.5 Simple and Compound Interest
- 2.6. Time, Speed and Distance
- 2.7. Time & Work
- 2.8. Ratio and Proportion
- 2.9. Area
- 2.10. Mixtures and Allegation

UNIT – III

3. Data Interpretation

- 3.1. Data Interpretation
- 3.2. Tables
- 3.3. Column Graphs

3.4. Bar Graphs
3.5. Line Charts
3.6. Pie Chart
3.7. Venn Diagrams

UNIT – IV

4. Logical Reasoning (**Deductive Reasoning**)

4.1. Analogy
4.2. Blood Relation
4.3 Directional Sense
4.4. Number and Letter Series
4.5. Coding – Decoding
4.6. Calendars
4.7. Clocks
4.8. Venn Diagrams
4.9. Seating Arrangement
4.10. Syllogism
4.11. Mathematical Operations

Reference books :

1. A Modern Approach To Verbal & Non Verbal Reasoning By R S Agarwal
2. Analytical and Logical reasoning By Sijwali B S
3. Quantitative aptitude for Competitive examination By R S Agarwal
4. Analytical and Logical reasoning for CAT and other management entrance test By Sijwali B S
5. Quantitative Aptitude by Competitive Examinations by Abhijit Guha 4 th edition
6. https://prepinsta.com/
7. https://www.indiabix.com/
8. https://www.javatpoint.com/

Course Title: Computer Network
Course Code: U-CON-615

Total Lectures: 53 Marks:50
Credit:03

LEARNING OBJECTIVES:

- The basic objective of Computer networking is to share resources, files, make connectivity.
- Computer networking enables computers to share data, application software and hardware devices.
- The most basic network consists of two computers connected directly by cable, for example sharing resources, such as printers and modems.
- Any computer capable of communicating on the network is known as a device or node.

COURSE OUTCOMES:

- To master the terminology and concepts of the OSI reference model and the TCP-IP Reference model.
- To master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- To be familiar with wireless networking concepts.
- To be familiar with contemporary issues in networking technologies.
- To be familiar with network tools and network programming.

UNIT 1: INTRODUCTION TO NETWORKS

1.1 A Communication model
1.2 Uses of computer network, network structure, network architecture.
1.3 Networks:- LAN, WAN ,MAN, ARPANET, NFSNET, INTERNET.
1.4 Wireless LAN Client Server mode
1.5 Peer to Peer Network Analog Signal ,Digital Signal
1.6 ISO Reference model, Services provided by each layer, TCP/IP model
1.7 Service primitives, connection oriented and connectionless services.

UNIT 2: TRANSMISSION MEDIA, NETWORK TOPOLOGY AND LAYER

2.1 Transmission Media & Magnetic media.
2.2 Twisted Pair Coaxial cable Fiber optics
2.3 Topologies with advantages & disadvantages:-Bus, Ring, Star, Tree, Mesh.
2.4 Infrared. Microwave.
2.5 Design issues store and forward packet switching.
2.6 Services provided to the transport layer.

2.7 Connectionless communication services.
2.8 Connection oriented communication services.

Unit 3: PROTOCOLS

3.1 INTERNET Related PROTOCOLS:
3.2 Need of IP address
3.3 Classes of IP Address.
3.4 Unicast, broad cast, multicast IP Addresses.
3.5 Subnet Mask.
3.6 Electronic mail, FTP, TFTP, SNMP,HTTP.
3.7 Introduction to IPV4, IPV6 and its features.

UNIT 4: ETHERNET & SWITCHING TECHNIQUES

4.1 Circuit Switching , Packet Switching, Message Switching
4.2 Ethernet Overview of Ethernet 10 Base, 100 Base
4.3 Fast Ethernet, POE, FDDI, Token Ring
4.4 VLAN and its features, frame relay.
4.5 CSMA-CD,CA
4.6 Flow control, Error Control, Congestion control.
4.7 Half, Full duplex communication.

REFERENCE BOOKS:

1. Computer Networking by Tanen Baum
2. Data and computer communications by William Stallings.
3. Data communication and networking by Behrouz a forouzan.

Course Title: Relational DBMS
Course Code: U-RDB-616

Total Lectures: 60 Marks: 50
Credit :-03

Learning Objective:

- Execute PL/SQL data type conversion functions
- Display output through PL/SQL programs
- Manipulate character strings in PL/SQL programs

Course Outcome :

After completing this course, you should be able to:

- Describe the fundamentals of the PL/SQL programming language
- Write and execute PL/SQL programs in SQL*Plus
- Debug PL/SQL programs

Syllabus:

Unit I: Introduction SQL languages

Chap 1. SQL Statements & Working with tables

1.1. DDL, DML, DQL, DCL
1.2. Data types in SQL
1.3. Creating & Managing Tables
1.4 Data Constraints
1.5 SELECT statement with where , Order by and Distinct clause
1.6 Oracle operators

Chap 2. Advance SQL

2.1 Oracle Views: Types, creating and managing views
2.2 SQL Functions: Single Row Functions, Character Functions, Character Manipulation , Number Functions , Date Functions , Conversion Functions
2.3 Group by and having clause

Unit –II Joins, subqueries & basics of PL/SQL

Chap 3 Working with Joins and Sub queries

3.1. What is Join?
3.2. Natural Join/Inner Join/Equijoin/outer join / self join
3.3. Joining With 'USING' Clause
3.4. Joining With 'ON' Clause
3.5. Subqueries: Single Row Sub query, Multiple Row Sub query

Chap- 4 PL/SQL basics

4.1. PL/SQL block structure

4.2. Condition logic

4.3 Loops

UNIT III More on PL/SQL

Chap: 5 Oracle Triggers and cursors

5.1. Triggers:

Triggers Syntax, Types of triggers: Row Level, Statement Level, Before , After, Enabling and Disabling Triggers, Replacing and Dropping Triggers

5.2 Oracle transactions: commit, rollback and savepoint

5.3. Working With Cursor : Types of cursor: Implicit & Explicit cursor, general cursor attributes

UNIT IV Advance Database objects

Chap 6 : Error handling and Database objects

6.1 Exception Handling in PL/SQL

6.2. PL/SQL Procedures and functions

Reference Books -

1. Oracle Database 10g SQL (Osborne ORACLE Press Series)by Jason price, McGrawHill, 0-07-222981-0.
2. Oracle Database 10g PL/SQL Programming by Scott Urman , Ron HARDMAN, MichaleMc Laughlin, Oracle Press, TMH, ISBN-0-07- 059779-0.
3. Oracle Database 10g The Complete Reference By Kevin Loney, Bob Bryla Oracle Press (TATA McGraw Hill Edition) ISBN-13:978-0-07- 059425-8, ISBN-10: 0-07-059425-2

Course Title: GUI Programming using C#
Course Code: U-GPC-617

Total Lectures: 60 Marks:50
Credit:03

Learning Objectives

- Working With Visual Studio
- Designing Forms
- Write Code, Database Connectivity

Course Outcome

- Handle Visual Studio
- Design form with menus, controls and write code
- Work with Advance Controls
- Connect Front End with Back End
- Perform DML Operation
- Can create database oriented application / small projects with database interaction.

SYLLABUS

Unit I

Chapter 1: Introduction to .net

1.1 what is .net and .net Framework
1.2 Visual Studio.net & .net Languages
1.3 Project types
1.4 c#.net History & design Goals
1.5 How c# differs from c++
1.6 Characteristics of c#.net and Console Vs. GUI Application

Chapter 2: Console Application Basic

2.1 I/O Statement
2.2 foreach loop
2.3 Array
2.4 ArrayList
2.5 Jagged Array
2.6 Hash Table

Unit: II

Chapter 3: Properties ,Events & Delegates

3.1 Properties & its type
3.2 Event
3.3 Delegate & Multicast Delegate
3.4 Creating & Starting thread
3.5 Exception handling

Chapter 4: Windows Form

4.1 Windows Form
4.2 MDI Form
4.3 Menustrip
4.4 Toolstrip, StatusStrip
4.5 Docking Controls
4.6 MessageBox

Unit: III

Chapter 5: Basic Controls

5.1 Button, TextBox, Label, LinkLabel
5.2 RadioButton, CheckBox
5.3 DateTimePicker, Timer
5.4 PictureBox
5.5 ComboBox, ListBox
5.6 RichTextBox, MonthCalender

Chapter 6: Container & Dialog

6.1 GroupBox, Panel
6.2 Common Dialog boxes
6.3 ProgressBar
6.4 TreeView
6.5 MaskedTextBox

Unit:- IV

Chapter 7: Ado.net Introduction

6.1 How Ado.net differs from Ado
6.2 Advantages of Ado.net
6.3 Connected & Disconnected Architecture
6.4 Dataset, DataReader & DataAdapter
6.5 SQL Commands

Chapter 8: Database Oriented Applications

7.1 Managed Data Providers
7.2 DataGridView Control
7.3 Developing Ado.net Based Application
7.4 Insert, Update & Delete operation on table
7.5 Filling the Dataset
7.6 Ado.net LINQ

References:-

1. Programming in C# A Primer - Second Edition By - E Balagurusamy
2. C#.Net Programming Wrox Publication
3. .net 4.0 programming black book by KOGENT LEARNING SOLUTIONS INC.
4. C# 2010 programming black book by KOGENT LEARNING SOLUTIONS INC.

Course Title:- Cloud Computing
Course Code: U-CCT-618

Total Lectures: 55 Marks: 50
Credit:- 03

Learning Objectives:

This course will help the students to get familiar with cloud computing fundamentals, architecture, services, implementation and deployment techniques, security challenges and future research trends etc.

Course Outcomes:

After completion of the course the learner should be able to:
1. Differentiate different computing techniques.
2. Compare various cloud computing providers/ Software.
3. Cloud and Mobile Cloud Security Implementation and Administration.
4. Understand Case Studies involved in cloud computing.

UNIT I Cloud Computing and Deployment Models

1 Introduction of Cloud Computing

- 1.1. Introduction
- 1.2. Cloud computing compared with Virtualization,
- 1.3. Benefits of cloud computing
- 1.4. Client server model

2 Cloud Deployment Models

- 2.1 Private cloud
- 2.2 Public Cloud
- 2.3 Hybrid Cloud
- 2.4 Community cloud
- 2.5 Popularity of Cloud deployment models

UNIT - II Cloud Service Models with Architectures

3 . Cloud Service Models

- 3.1 Various Cloud Services
- 3.2 PaaS
  - I. Model
  - II. Architecture
  - III. Platform as a service: Google App Engine
- 3.3 SaaS
  - I. Model
  - II. Architecture
  - III. Software as a service: Microsoft Azure

3.4 IaaS

I. Model
II. Architecture
III. Infrastructure as a service: Amazon EC2

UNIT – III Cloud Deployment Techniques and Technologies

4. Cloud Deployment Techniques

4.1 Factors for Successful Cloud Deployment
4.2 Network Requirements
4.3 Potential Problem areas in a cloud Network and their Mitigation
4.5 Cloud Network Topologies

5.Cloud Technologies: Web Services, AJAX and MASHUPs

5.1 web services: SOAP and REST
5.2 AJAX: asynchronous 'rich' interfaces
5.3 Mashups: User interface services

UNIT – IV Mobile Cloud Computing Security Challenges

6. Mobile Cloud Computing

6.1 Introduction
6.2 Benefits of MCC
6.3 Architecture of MCC
6.4 challenges in mobile and at cloud shield

7. Cloud and Mobile Cloud Security Challenges

7.1 Benefits for Security as a service
7.2 Issues with Security as a Service
7.3 Cloud Security Architecture
7.4 Mobile Cloud Security Architecture

References:

1. Enterprise Cloud Computing: Technology, Architecture, Application By Gautam Shroff
2. Cloud Computing Principles and Paradigms, Rajkumar Buyya Wiley
3. Distributed and Cloud Computing, Kai Hwang, Mk Publication
4. Cloud computing Black Book Dreamtech Publication

Course Title:- Advance Java
Course Code: U-ADJ-619

Total Lectures: 60 Marks: 50
Credit:- 03

Learning Objectives:

- Learn the basic concepts of Object-Orientation and how they are handled in Java
- Covers techniques for better class construction
- Understand Exceptions. How and when they should be handled
- An overview of database access and details for managing information using the JDBC API
- A presentation of Enterprise JavaBeans and how to use it

Course Outcome:

After Completion of this course students are able to :

- Use the methods of the Applet and Component classes required for a basic applet
- Describe the classes in the AWT package that relate to the Applet class
- Describe the AWT graphics explain controls and how to apply them in the container
- Develop programs using Event class and Event Listener Interface
- Develop a program for steps to connect a database
- Describe the use of JDBC
- Develop program to use JDBC to query a database and modify

Syllabus

Unit I

1. Introduction to AWT: Working with windows, Graphics Text
    - 1.1 AWT Classes
    - 1.2 Windows Fundamentals
    - 1.3 Working with Frame window
    - 1.4 Working with Graphics
    - 1.5 Working with Colors & Fonts

2. Event Handling:
    - 2.1 The delegation event model
    - 2.2 Event handling mechanism
    - 2.3 Event class
        - 2.3.1. ActionEvent class
        - 2.3.2. The KeyEvent class
        - 2.3.3. The MouseEvent class
        - 2.3.4. The WindowEvent class
    - 2.4 Adapter class

Unit-II

3. Swing Components
    - 3.1 Icons & Labels Button & Label, TextField & Buttons,
    - 3.2 CheckBoxes, Radio buttons
    - 3.3 Combo Box & Lists
    - 3.4 Scroll panes
    - 3.5 Trees
    - 3.6 Tables
    - 3.7 Menu Bars & Menus

4. Networking
    - 4.1 The java.net package
    - 4.2 Connection oriented transmission – Stream Socket Class
    - 4.3 Creating a Socket to a remote host on a port (creating TCP client and server)
    - 4.4 Simple Socket Program Example
    - 4.5 Programs on chatting

Unit-III

5. JDBC
    - 5.1 The design of JDBC
    - 5.2 Basic JDBC Concept
    - 5.3 Drivers
    - 5.4 Making the Connection, Statement
    - 5.5 Executing SQL commands
    - 5.6 Executing queries
    - 5.7 Scrollable and updatable result sets
    - 5.8 Metadata, transactions

Unit-IV

6. Servlet
    - 6.1 Introduction
    - 6.2 Life cycle of servlet
    - 6.3 Handling HTTP Get Request
    - 6.4 Handling HTTP Post Request

7. Introduction to Java Beans & Hibernate
    - 7.1 What is bean?
    - 7.2 Advantages
    - 7.3 The bean-writing process
    - 7.4 Introduction to jar and manifest files
    - 7.5 The java beans API
    - 7.6 Overview Of hibernate
    - 7.7 Hibernate Architecture

Reference Books:

1) Complete reference Java by Herbert Schildt(5th edition)
2) Java 2 programming black books, Steven Horlzner
3) Programming with Java , A primer ,Forth edition , By E. Balagurusamy
4) Java servlet Programming by Jason Hunter, O'Reilly
5) Core Java Volume-II-Fundamentals, Eighth Edition, Cay S. Horstmann, Gary Cornell, Prentice Hall, Sun Microsystems Press.

Course Title: Programming Language Concept
Course Code: Course Code: U-PLC-620

Total Lectures: 58 Marks:50
Credit:03

Learning objectives
This course will enable a student to:

- Master many of the fundamental concepts that underlie programming language syntax and semantics through a comparative study of several languages and their features
- Learn several new programming language features and paradigms
- Gain the ability to study conceptual linguistic issues without being blinded by a particular language's implementation
- Gain insight into the problem of designing new languages
- Presents examples of important programming languages and paradigms such as LISP, ALGOL, ADA, ML, Prolog, and C++.

Course outcomes
After completing this course, student will be able to:

- Learn new programming paradigms and languages on their own.
- Describe programming language syntax formally and semantics informally
- Identify appropriate programming languages to use to address the specific needs of a stated problem.
- Explain and apply basic constructs and concepts used in common programming language

SYLLABUS

Unit –I Language Design Issues

Why Study Programming Languages?, A short history of programming languages ,Application Domains, The Impact Programming Paradigms, Role of Programming Languages, Programming Environments
Programming Language Syntax: General Syntactic Criteria, Syntactic Elements of a Language

Unit –II Language Translation and Elementary Data Types

Stages in Translation: Analysis of the Source Program, Synthesis of the Object Program
Properties of Types and Objects -Data Objects, Variables and Constants, Data Types, Programmer Constructed Data Objects, Declaration, Type Checking and Type Conversion, Assignment and Initialization
Scalar Data Types: Numeric Data Types, Enumerations, Booleans, Characters
Composite Data Types: Character Strings, Files and Input –Output

Unit-III

Structured Data Types: Structured Data Objects and Data Types, Implementation of Data Structure Types, Declarations and Type Checking for Data Structures, Vectors and Arrays, Records, Lists, Sets

Inheritance: Derived classes, Methods, Abstract classes, Smalltalk overview, Objects and Messages, Abstraction concepts, Inheritance and software reuse
Polymorphism

Sequence control: Implicit and explicit sequence control

Sequencing with arithmetic expressions: Tree structure representation, Execution time representation

Sequence control between statements: Basic statements, Structured sequence control, Prime programs

Unit-IV

Subprogram sequence control: Simple call-return subprograms
Attributes of Data control: Names and referencing environments, Static and Dynamic Scope, Block Structure, Local Data and Local Referencing Environments
Parameter Transmission: Actual and Formal Parameters, Methods for Transmitting Parameters
Explicit Common Environment: Dynamic Scope, Static Scope and Block Structure
Storage Management: Elements Requiring Storage, Programmer and System Controlled Storage
Static Storage Management, Heap Storage Management: LISP overview

Reference Books:
1. Programming Languages : Design and Implementation – Terrance W. Pratt, Marvin V. Zelkowitz, T.V. Gopal
2. Principles of Compiler Design- By Alfred V. Aho, Jeffrey D. Ullman. NarosaPublishing House ISBN-81-85015-61-9
3. Compilers, Principles, Techniques and Tools - A.V. Aho, Ravi Sethi and J.D. Ullman. ISBN817-808-046-x
4. Introduction to system software By D. M. Dhamdhere

Course Title: LAB. COURSE – XVII (Computer Network)
Course Code: U-LAC-621

Marks:50
Credit:02

LEARNING OBJECTIVES:

- The basic objective of Computer networking is to share resources, files, make connectivity.
- Computer networking enables computers to share data, application software and hardware devices.
- The most basic network consists of two computers connected directly by cable, for example sharing resources, such as printers and modems.
- Any computer capable of communicating on the network is known as a device or node.

COURSE OUTCOMES:

- To master the terminology and concepts of the OSI reference model and the TCP-IP Reference model.
- To master the concepts of protocols, network interfaces, and design/performance issues in local area networks and wide area networks.
- To be familiar with wireless networking concepts.
- To be familiar with contemporary issues in networking technologies.
- To be familiar with network tools and network programming.

PROPOSED PRACTICAL LIST

1. Perform the practical on my network places.
2. Study the OSI reference model.
3. Study the TCP/IP model.
4. Perform the practical on creating user .
5. Perform the practical on creating groups.
6. Perform the practical on LAN sharing printer, files and folder over the network.
7. Perform the practical on IP Config command.
8. Perform the practical on net stat command.
9. Perform the practical on net view command.
10. Perform the practical on net user command.
11. Study the topologies.
12. Study the types of networks.
13. Perform the practical on creating an e-mail id and send the messages and receives the messages.
14. Set manual IP address, check connectivity – ipv4, ipv6
15. Installation of windows OS.

Course Title: LAB. COURSE – XVIII (Relational DBMS)
Course Code: U-LAC-622

Marks:50
Credit:02

Learning Objective:

- Execute PL/SQL data type conversion functions
- Display output through PL/SQL programs
- Manipulate character strings in PL/SQL programs

Course Outcome :

After completing this course, you should be able to:

- Describe the fundamentals of the PL/SQL programming language
- Write and execute PL/SQL programs in SQL*Plus
- Debug PL/SQL programs

Proposed Practical List:

1. STUDY OF DDL STATEMENTS
2. STUDY OF DML STATEMENTS
3. STUDY OF DCL STATEMENTS
4. STUDY OF SELECT STATEMENTS WITH DIFFERENT OPERATORS. (Arithmetic Operators ,Logical Operators, Range Searching, Pattern Matching, Column Alias)
5. STUDY OF Data Constraints.
6. 9. STUDY OF ORACLE VIEWS.
7. STUDY OF ORACLE FUNCTIONS.
8. STUDY OF Grouping Data from tables.
9. STUDY OF ORACLE JOIN & SUBQUERIES.
10. INTRODUCTION OF PL/SQL.
11. LOOPING & CONDITIONAL STRUCTURES.
12. ORACLE TRIGGERS
13. ORACLE CURSORS
14. ORACLE EXCEPTIONAL HANDLERS.
15. ORACLE STORED PROCEDURES & FUNCTIONS.

Course Title: LAB. COURSE – XIX (GUI Programming using C#)
Course Code: U-LAC-623

Marks:50
Credit:02

Learning Objectives

- Working With Visual Studio
- Designing Forms
- Write Code, Database Connectivity

Course Outcome

- Handle Visual Studio
- Design form with menus, controls and write code
- Work with Advance Controls
- Connect Front End with Back End
- Perform Database operation using C#.

Proposed Practical List:-

1. Introduction to Visual Studio.net
2. Console application for I/O statement
3. Console application for foreach loop with Array class
4. Console application for HashTable
5. Console application for Read Write properties
6. Console application for Exception Handling
7. Console application to demonstrate Thread
8. Windows application for MDI form
9. Windows application to create Menus
10. Windows application to show MessageBox in different type
11. Windows application to perform Addition of two TextBox
12. Windows application to work with ComboBox
13. Windows application to work with ListBox
14. Windows application to work with ProgressBar and Timer
15. Windows application to demonstrate DialogBox
16. Windows application to work with TreeView
17. Windows application to connect with MS-Aceess
18. Windows application to connect with Oracle
19. Windows application to Perform DML operation on Table
20. Windows application to show database record in DataGridView

Course Title:- LAB. COURSE – XX (Cloud Computing)
Course Code: U-LAC-624

Max. Marks: 50
Total Credit:- 02

Outcomes: Learner will be able to…

1. Appreciate cloud architecture
2. Create and run virtual machines on open source OS
3. Implement Infrastructure , storage as a Service.
4. Install and appreciate security features for cloud

Proposed Practical List:

1. Study of Cloud Computing & Architecture.
2. Virtualization in Cloud.
3. Study and implementation of Infrastructure as a Service
4. Study and installation of Storage as Service
5. Study and implementation of Platform as a Service
6. Securing Servers in Cloud secure web server, how to secure data directory and introduction to encryption for own cloud.
7. Administrative features of Cloud Management ,User Management
8. Case study on Amazon EC2
9. Case study on Microsoft azure
10. Case study on Google App. Engine
11. Mini Task on Case Study any open system used for cloud.

Course Title: LAB. COURSE – XXI (Advance Java)
Course Code: U-LAC-625

Marks:50
Credit:02

Learning Objectives:

- Understand Exceptions. How and when they should be handled
- An overview of database access and details for managing information using the JDBC API
- Examines the use of Object Serialization
- A presentation of Enterprise JavaBeans and how to use it

Course Outcome:

After Completion of this course students are able to :

- Use the methods of the Applet and Component classes required for a basic applet
- Describe the AWT graphics explain controls and how to apply them in the container
- Develop programs using Event class and Event Listener Interface
- Develop a program for steps to connect a database
- Describe the use of JDBC
- Develop program to use JDBC to query a database and modify
- Describe life cycle of servlet

Proposed Practical List:

1) working with Frame window
2) Working with Graphics class
3) Working with Color Class
4) Working with Font Class
5) Working with Events
6) Working with Label, Button and TextField
7) Working with CheckBox and RadioButton
8) Working with Combobox and List
9) Working with Menubar and Menus
10) Handling Socket Programming
11) Working with JDBC.
12) JDBC Programme to Select, Insert Data in Database
13) Handling HTTPGET and HTTPPost request

Course Title:- LAB. COURSE – XXII (Programming Language Concept)
Course Code: U-LAC-626

Max. Marks: 50
Total Credit:- 02

Learning objectives

This course will enable a student to:

- Master many of the fundamental concepts that underlie programming language syntax and semantics through a comparative study of several languages and their features
- Learn several new programming language features and paradigms
- Gain the ability to study conceptual linguistic issues without being blinded by a particular language's implementation
- Gain insight into the problem of designing new languages
- Presents examples of important programming languages and paradigms such as LISP, ALGOL, ADA, ML, Prolog, and C++.

Course outcomes

After completing this course, student will be able to:

- Learn new programming paradigms and languages on their own.
- Describe programming language syntax formally and semantics informally
- Identify appropriate programming languages to use to address the specific needs of a stated problem.
- Explain and apply basic constructs and concepts used in common programming language

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Practicals based on Unit I, Unit II, Unit III and Unit IV.

Course title: Mini Project
Course code: U-PRW-542

Max. Marks: 50

Learning objectives

The student will be able to:

- Discover potential research areas in the field of IT
- Identify real world problems and challenges that need IT based solutions
- Demonstrate an ability to work in teams
- Improve the team building, communication and management skills of the students.
- Conduct a survey of several available literature in the preferred field of study
- Use all concepts of IT in creating a solution for a problem
- Formulate and propose a plan for creating a solution for the research plan identified
- Report and present the findings of the study conducted in the preferred domain

Course outcomes

After completing this course, the students will be able to have hands-on to carry out the Project Work using various platforms and project tools which will provide practical experience. Also,

- Implement what is learnt during course
- Get real-life experience by working in real systems
- Understand the problems faced during project implementation.
- Enhance the problem solving ability by solving the real-time problems.
- Learn team work and appreciate role of each of the team members.

Mini project Description:

- A team of maximum 3 students can be formed for this project and work together to learn working collaboratively.
- The team can choose the project area from the following:
    - Java based project
    - .Net based project
    - A project consisting analysis of an existing emerging technology based system
    - Network based project
    - Any other project based on IT field
- The team will be assigned an internal guide for the project, who will mentor the team during the project execution.
- The team has to take prior permission from the guide for any project that they have chosen.
- The team needs to report to the guide periodically and inform about the project progress. The timings for the reporting time will be informed at the beginning of the semester.

Mini project documentation format:

Acknowledgement

Preface

Index:

1. Project definition
2. Objective and scope of the project
3. Existing system
    a. Introduction
    b. Problem analysis
        i. Study operating problems
        ii. Study informational problems
        iii. Feasibility study
    c. Present system model (Use any design tools / technique)
    d. What's new in the proposed system (if applicable)
4. Proposed system
    a. Functional requirements
    b. Non-functional requirements
    c. Project plan
5. Software requirement analysis and specification
    a. General description
    b. Specific functional and non-functional requirements
6. System design
    a. Proposed system model (Use any design tools / technique)

Development based projects:

7. Development
    a. Source code (for major processes)
8. Implementation
    a. Implementation of the project
    b. Screenshots of the interface
    c. Post-implementation and software maintenance

OR

Analysis based projects:

7. Working outcomes of the existing system
8. Working outcomes of the proposed system
    a. Predicted working outcomes of the proposed system
    b. Comparison of working of proposed system and existing system
09. Technical and managerial lessons learnt
10. Future enhancement
11. References

Semester-VI

Course Title: Personality Development & Interview Techniques
Course Code: U-PDI-714

Total Teaching Hours:36 Marks:50
Credit:02

Learning objective

The programme aims at grooming the participants through sensitizing them about proper behavior, socially and professionally, in formal and informal circumstances. The main **objective** of the programme is

- To build self-confidence
- To build enhance self-esteem
- To improve overall **personality** of the participants.

Course outcomes

After successful completion of this course student are able to

- Write resume
- Groom corporate habits
- Face frequently asked interview questions
- Understand the importance of respect as a critical corporate value
- Create the right impression in Interviews

Introduction	Introducing the connect with work programme	What is in it for me? Understanding the objective of the CWW programme
Interview Skills	Online Image	Building a strong impression online and sustaining online credibility
	Self-Awareness	To Know your personality through an MBTI
	Grooming	To study corporate grooming habits (The right attire)
	Body Language	To imbibe the right body language for a professional environment
	Confidence	To increase self-belief and faith in one's own abilities
	Interview FAQs	Learn to face frequently asked interview questions
	Resume	To build a strong profiles through effective resume writing
	Rejections	To understand how to handle interview rejections and come back from set-backs

	Total no. of Hrs.13	
Corporate Readiness	Values	An introduction to values in a corporate environment
	Ownership	To learn how to be accountable and own tasks, projects etc.
	Respect	To understand the importance of respect as a critical corporate value
	Teamwork	To understand collaboration and its importance in the corporate world
	Autodidactism	To leverage self-learning and self-directed education
	Flexibility	To learn how to be flexible while playing multiple roles
	Time Management	To improve effectiveness at work and achieve a balance
	Stress Management	To understand how stress can be managed and to lower depression
	Positive Attitude	To take the step towards positive success by adapting the right approach
	LinkedIn (Profile Management)	To gain knowledge on LinkedIn account management and tips to enhance a profile
	SWOT Analysis	To Self evaluate and analyze strengths and areas of improvement
	Total no. of Hrs. 15	
Mock Interviews & Group Discussions	In basket simulation (Learning Application)	Group Discussion rules and enhance Public Speaking skills (Group Discussion)
		Tips to handle Interviews and be able to create the right impression (Mock Interviews)
	Total no. of Hrs. 08	

Course Title: Web Designing Using ASP.Net
Course Code: U-WDA-715

Total Lecture: 53 Marks:50
Credit:03

Learning Objective: To understand the fundamentals of developing modular application by using object oriented methodologies.

- Set up and configure programming environment for ASP.net programs.
- Create ASP.Net applications using standard .net controls.
- Develop a data driven web application

Course Outcomes: Apply technical knowledge and perform specific technical skills, includes:

- Design, Debug and Deploy web applications using ASP.NET
- Use of ASP.NET controls in web applications.
- Creation database driven ASP.NET web applications.
- Creation of web services.

Syllabus

Unit 1. Introduction to ASP.NET
1.1. What is ASP.NET
1.2. Overview of .Net framework
1.3. IDE of Visual Studio.Net
1.4. Introduction to WebForm
1.5. Event Driven Programming
1.6. Compile Code
    1.6.1. Code Behind and Inline Coding
1.7 ASP.Net Directives

Unit 2. Server Control
2.1. Post back
2.2. Web Server Control: Label, Panel, Table, Button, Image Button, Link Button, Textbox, CheckBox, RadioButton, ListBox , DropDownList, CheckBoxList , RadioButtonList, Hyperlink, Image
2.3. Rich Controls: Calendar, Wizard, File Upload
2.4. Validation Controls
2.5. Master Page
2.6. Themes & CSS

Unit 3. Database Access
3.1. Introduction about ADO.NET
3.2. Introduction about Provider, Adapter, Reader,
Command Builder 3.3. Database Access using ADO.NET

Unit 4. Client Server Communication
4.1. Communications with Web Browser
4.2. Response Object
4.3. Query String
4.4. Cookies
4.5. Session Management and Variable Scope

Unit 5. Advance ASP.NET
5.1. Web.config
5.2. Sitemap path Server Control
5.3. User Control
5.4 Web Services
    5.4.1 Basics of Web Services
    5.4.2 Interacting with web services
5.5 Error Handling
    5.5.1. Unstructured Error
    5.5.2. Structured Error
    5.5.3. Error handling in Database

Reference Books:-
1] Asp.net 4.0 Black Book
2] Mastering Asp.net , BPB Publication, Russel.
3] Asp.net the Complete Reference: MatThew Macdonald

Course Title: Digital Image Processing using Matlab
Course Code: U-DIP-716

Total Lecture: 53 Marks:50
Credit:03

Learning Objectives:

- To study image processing concepts
- To study mathematics and algorithms for image processing
- To study applications in image processing

Course Outcome:

- Describe fundamental steps used in digital image processing
- Understand applications of digital image processing
- Perform survey on image processing techniques
- Design and implement image processing programs with applying algorithms
- Solve Image Processing problems
- Describe different modalities and current techniques in image processing (overview)
- Describe how digital images are represented and stored efficiently depending on the desired quality, color depth
- Use the mathematical principles of digital image enhancement (contrast, noise)
- Describe and apply the concepts of filtering techniques
- Analyze the algorithms used in image processing to perform designated tasks using MATLAB
- Apply the knowledge primarily obtained by studying examples and cases in the field of biomedical imaging to other engineering disciplines.

Syllabus

UNIT- I Introduction to DIP

What is digital image processing? Example fields of digital image processing, Fundamental steps in digital image processing, Components of image processing system. Elements of visual perception, Lights and electromagnetic spectrum, Image sensing and acquisition, Image sampling and quantization, Some basic relationship between pixels.

Unit –II Digital Image Representation using Matlab

Digital Image Representation: Coordinate Conventions, Images as Matrices Reading Images, Displaying Images, Writing Images, Data Classes, Image Types: Intensity Images, Binary Images, Converting between Data Classes and Image Types: Converting between Data Classes, Converting between Image Classes and Types, Array Indexing: Vector Indexing, Matrix Indexing, Selecting Array Dimensions, Some Important Standard Arrays.

Introduction to M-Function Programming: M-Files, Operators, Flow Control, Code Optimization, Interactive I/O

Unit- III Intensity transformation using Matlab

Intensity Transformation Functions: Function imadjust, Logarithmic and Contrast-Stretching Transformations, Some Utility M-Functions for Intensity Transformations Histogram Processing and Function Plotting: Generating and Plotting Image Histograms, Histogram Equalization, Histogram Matching (Specification) Spatial Filtering: Linear Spatial Filtering, Nonlinear Spatial Filtering

Unit –IV Frequency Domain Processing and Histogram Processing

Frequency Domain Processing: The 2-D Discrete Fourier Transform, Computing and Visualizing the 2-D DFT in MATLAB, Filtering in the Frequency Domain: Fundamental Concepts, Basic Steps in DFT Filtering, A Model of the Image Degradation/Restoration Process, Color Image Representation in MATLAB: RGB Images, Indexed Images IPT Functions for Manipulating RGB and Indexed Images.

Reference Books:

1. Digital Image Processing Using MATLAB by Rafael C. Gonzalez, Richard E. Woods, Steven L.Eddins
2. Digital Image Processing by Rafael C. Gonzalez, Richard E. Woods

Course Title: Database Administration
Course Code: U-DBA-717

Total Lecture: 50 **Marks: 50**
Credit: 03

Learning Objective:
The purpose of database administration is to provide reliable, consistent, secure, and available corporate-wide data. This discusses the roles performed by database administration, distinguishes database administration and data administration, and describes several database operation and maintenance issues.

Course Outcome:
A Database Administrator is responsible for maintaining all aspects of a database. These professionals can be found working in a variety of industries. Database Administrators work to ensure databases are secure and that they are performing properly. They may also troubleshoot problems and work on development as well. They make sure that data is consistent in the database and that it is clearly defined. Depending on their level, Database Administrators may monitor user access, determine user needs, design databases, perform tests, ensure standards are maintained and work with other IT professionals and managers to ensure database integrity and security are kept up with. Important skills include technical, communication, analytical and problem-solving skills.

SYLLABUS

Unit I: DBA Basics and Tablespaces

1. Basics of DBA
Functions of DBA, Oracle Instance- Starting and Stopping Instance, Memory Architecture- Oracle 10G Memory structure, Background Process, Physical Database Structure -Control file , Data file , Online Redo log file, Archive file, trace file, alert log file, parameter file SP file password file, Manual Database creation

2. Tablespaces
Introduction to Tablespaces - Types of Tablespaces - SYSTEM , SYSAUX, Big file, Undo, default, temporary, online, offline Tablespaces ,read only Tablespaces, Working with Tablespaces - Creating Tablespaces, altering Tablespaces, modifying Tablespaces, Management of Tablespaces

Unit II: Database Layouts

3. Physical Database Layouts & storage management.
Traditional disk space storage, Resizing tablespaces and database, Moving datafile, Moving online redo log file, moving control files, Undo basics - roll back, read consistency, database recovery, flash back operations

Unit III: Backup Recovery and Database Tuning

4. Backup and Recovery

Logical Backup -data pump export/import process , Physical backup - Offline Online backup, Flash Recovery area

5. Database Tuning

Tuning - application design, effective table design, Distribution of CPU requirements, Effective application design, Tuning SQL, Impact of order of load rates, Additional Indexing options, Generating explain plan.

Unit IV: Database Security and Auditing

6. Database security & Auditing

Non database security, database authentication methods, database authentication, DBA authentication, user accounts, database authorization methods, auditing.

Reference Books

1. Oracle database 10G DBA handbook by Kevin Loney, Bob Bryla Oracle Press
2. OCP oracle database 10G New features for admininstrators exam guide By SAM R Alapati

Course Title: Python Programming
Course Code: U-PYP-718

Total Lecture: 53 Marks: 50
Credit: 03

Learning Objectives

At the end of the course, the student will be able to:

1. Explain basic principles of Python programming language
2. Implement object oriented concepts
3. Understanding of scripting and the contributions of scripting languages.
4. Understanding of the built-in objects of Python

Course Outcome

After complication of the program student will able:

1. Adapt and combine standard algorithms to solve a given problem (includes numerical as well as non-numerical algorithms)
2. Adequately use standard programming constructs: repetition, selection, functions, composition, modules, aggregated data (arrays, lists, etc.)
3. Explain what a given program (in Python) does
4. Identify and repair coding errors in a program
5. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Syllabus

Unit – I Getting started with python

Introduction to python, features, program output, program input and raw_input(),comments in python, operators, Code blocks and indentation.

Unit –II Python Basics, Syntax and Style

Variable Assignment, Identifiers.
Numbers: Introduction to Numbers, Integers, Floating Point Real Numbers, Complex Numbers, Operators, Built-in Functions.
Strings: Strings and Operators, String-only Operators, Built-in Functions, String Built-in Methods, Special Features of Strings.
Lists: Operators, Built-in Functions, List Type Built-in Methods, Special Features of Lists.
Tuples: Tuple Operators and Built-in Functions, Special Features of Tuples

Unit –III Control Constructs and Exceptions

Conditionals and Loops: if statement, else Statement, elif (a.k.a. else-if) Statement, while Statement, for Statement, break Statement, continue Statement, pass Statement, else Statement…
Errors And Exceptions: What Are Exceptions?, Exceptions in Python, Detecting and Handling Exceptions.

Unit –IV Functions

What Are Functions?, Calling Functions, Creating Functions, Passing Functions, Formal Arguments, Positional Arguments, Default Arguments, Why Default Arguments?, Default Function Object Argument Example, Variable-length Arguments, Non-keyword Variable Arguments (Tuple) , Keyword Variable Arguments (Dictionary)

Unit –V Classes and OOP

Introduction, Object-oriented Programming, Classes, Class Attributes, Instances, Instance Attributes, Binding and Method Invocation, Composition, Subclassing and Derivation Inheritance, Built-in Functions for Classes, Instances, and Other Objects, Type vs. Classes/Instances

Reference Books:

1. Core Python Programming, Second Edition By Wesley J. Chun., Publisher: Prentice Hall
2. Learning Python, 5th edition By Mark Lutz, Publisher: O'Reilly

Course Title: Data Mining
Course Code: U-DAM-719

Total Lecture: 50 Marks:50
Credit:03

Learning Objective:

- Understanding of the value of data mining in solving real-world problems.
- Understanding of foundational concepts underlying data mining.
- Understanding of algorithms commonly used in data mining tools.
- Ability to apply data mining tools to real-world problems..

Course Outcome:

- Display a comprehensive understanding of different data mining tasks and the algorithms most appropriate for addressing them.
- Evaluate models/algorithms with respect to their accuracy.
- Demonstrate capacity to perform a self directed piece of practical work that requires the application of data mining techniques.
- Critique the results of a data mining exercise.
- Develop hypotheses based on the analysis of the results obtained and test them.

Syllabus

Unit –I

1. Introduction

What is Data Mining?, Definition, DBMS Vs Data Mining, Issues and Challenges in DM, DM Application Areas, , Basic Data Mining Task, data mining metrics, social implications of data mining, Data Mining Vs Knowledge Discovery in Databases(KDD)

2. Related concepts

OLTP system, IR system, Decision Support Systems, dimensional modeling, data warehousing, OLAP, web search engines

Unit –II

3. Statistical perspectives on data mining

Point estimation, model based on summarization, Bayes Theorem, Hypothesis testing, regression and correlation

4. Non parametric techniques

Decision trees, neural networks, genetic algorithms

Unit-III

5. Classification

Introduction, Issues in classification, Bayesian classification, distance based algorithms: KNN, decision tree , NN supervised learning

6. Clustering
Introduction, outliers, hierarchical algorithms, partitioned algorithms, BRICH algorithm

Unit IV
7. Association
What is an Association rule?, Method to discover Association Rule, basic algorithms, large itemsets, data parallelism

Reference books:

1. Data Mining Techniques : Arun K. Pujari ,
2. Data Mining: Introductory and Advanced Topics: M.H.Dunham Pearson Education.
3. Data Mining: Concepts & Techniques, Morgan Kaufman. 2006

Text Books

1. Jiawei Han, Micheline Kamber, "Data mining: concepts and techniques", Morgan Kaufmann Publisher, second edition
2. G. K. Gupta, "Introduction to Data mining with case studies", PHI, second edition

Course Title: Programming with TypeScript
Course Code: U-PWT-720

Total Lecture: 53 Marks:50
Credit:03

Learning Objectives:

This course will explain what Typescript is and how we can code a web application using Typescript.

Course Outcome:

After completion of this course, the students can

- Compile, Test and Run TypeScript on workstation
- Use TypeScript classes and type annotations
- Build and run a simple app using TypeScript
- Code a web application using Typescript.

Syllabus

Unit – I: Introduction, Data Types and Variables

Introduction: What is TypeScript?, Benefits of TypeScript, Setup the Environment, First TypeScript Example

Data Types and **Variables**: Basic Data Types, Arrays, Tuples, Enum, Any and void, null and undefined, Type Inference, Type Casting, Difference between let and var, Const declaration

Unit – II: Operators and Programming Construct

Operators: What is an Operator?, Arithmetic Operators, Relational Operators, Logical Operators, Short-circuit Operators (&& and ||), Bitwise Operators, Assignment Operators, Miscellaneous Operators, Type Operators

Programming Construct:

Decision making: The if statement, if…else Statement, else…if Ladder, The switch…case Statement,

Looping statement: The while Loop, The for Loop, The for...in loop, The do…while loop, The break Statement, The continue Statement, The Infinite Loop

Unit III: Functions and Numbers

Function: Defining a Function, Calling a Function, Returning Functions,
Parameterized Function, Optional Parameters, Rest Parameters, Default Parameters, Anonymous Function, The Function Constructor, Recursion and TypeScript Functions, Function Overloads

Numbers: Number Methods, toExponential(), toFixed(), toLocaleString(), toPrecision(), toString(), valueOf()

Unit – IV: String, Array and Tuples

String: Defining String, String Methods

Array: Features of an Array, Declaring and Initializing Arrays, Accessing Array Elements, Array Object, Array Methods, Array Destructuring, Array Traversal using for…in loop, Multidimensional Arrays
Tuples: Accessing values in Tuples, Tuple Operations, Updating Tuples, Destructuring a Tuple

Unit – V: Classes and Interfaces:
Working with Classes: Writing and Using Classes, Constructor method, Inheritance of classes,
Working with Interfaces: Interface Declaration and Initialization with an object, Interface Implementation by class, Extending Interfaces, Static Properties, Abstract class
Namespace: Defining Namespace, Using Namespaces, Nested Namespace.

Class: B.C.A. T.Y. VI Sem
Course Title: LAB. COURSE – XXIII (Web Designing Using ASP.Net)
Course Code: U-LAC-721

Credit:02

Learning Objective: To understand the fundamentals of developing modular application by using object oriented methodologies.

- Set up and configure programming environment for ASP.net programs.
- Create ASP.Net applications using standard .net controls.
- Develop a data driven web application

Course Outcomes: Apply technical knowledge and perform specific technical skills, includes:

- Design, Debug and Deploy web applications using ASP.NET
- Use of ASP.NET controls in web applications.
- Creation database driven ASP.NET web applications.
- Creation of web services.

Proposed Practical List

1. Understanding an ASP.Net Web Form.
2. Develop an ASP.Net Program using controls (Label, TextBox, Button Control).
3. Develop an ASP.Net Program using controls (ListBox, ComboBox Control).
4. Develop an application which allow user to upload a .jpeg file and display it in an image box on the same page.
5. Develop an ASP.Net Program to illustrate Validation Controls.
6. Design master page which contain information about your college. Display College title with different Properties
7. Develop an ASP.Net Program to illustrate Themes and CSS.
8. Develop an ASP.Net Program using Database Programming concepts in ADO.Net.
9. Accept ItemCode, ItemName, ItemPrice and Qty from the user, store it as cookies and then display them on the next page
10. Develop an ASP.Net Program using Data Binding with Server controls.
11. Develop an ASP.Net Program using Web User controls.
12. Develop an ASP.Net Program, to illustrate Web service.

Class: B.C.A. T.Y. VI Sem
Course Title: LAB. COURSE – XXIV (Digital Image Processing)
Course Code: U-LAC-722

Total Marks: 50
Credit:02

Learning Objectives:

- To study image processing concepts
- To study mathematics and algorithms for image processing
- To study applications in image processing

Course Outcome:

- Understand applications of digital image processing
- Perform survey on image processing techniques
- Solve Image Processing problems
- Describe different modalities and current techniques in image processing (overview)
- Describe how digital images are represented and stored efficiently depending on the desired quality, color depth
- Use the mathematical principles of digital image enhancement (contrast, noise)
- Describe and apply the concepts of filtering techniques
- Apply the knowledge primarily obtained by studying examples and cases in the field of biomedical imaging to other engineering disciplines

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Proposed Practical List:

1. Study of MATLAB environment
2. Study of reading, writing and showing images
3. Study of image type conversions
4. Working on vectors and matrices
5. Study of M-file and control statements
6. Study of Histogram processing and equalization
7. Study of intensity transformation
8. Study of spatial filtering techniques
9. Study of Image restoration process
10. Write a program for color image processing

Course Title: LAB. COURSE – XXV **(**Database Administration)
Course Code: U-LAC-723

Total Marks: 50
Credit: 02

Learning Objective:
The purpose of database administration is to provide reliable, consistent, secure, and available corporate-wide data. This discusses the roles performed by database administration, distinguishes database administration and data administration, and describes several database operation and maintenance issues

Course Outcome:
A Database Administrator is responsible for maintaining all aspects of a database. These professionals can be found working in a variety of industries. Database Administrators work to ensure databases are secure and that they are performing properly. They may also troubleshoot problems and work on development as well. They make sure that data is consistent in the database and that it is clearly defined. Depending on their level, Database Administrators may monitor user access, determine user needs, design databases, perform tests, ensure standards are maintained and work with other IT professionals and managers to ensure database integrity and security are kept up with. Important skills include technical, communication, analytical and problem-solving skills.

Proposed Practical List:

1. Review of SQL commands using graphical environment
2. Role of DBA
3. Creating a Database
4. Starting and stopping database instance
5. Managing tablespaces
6. Administering the Control Files and Redo Logs
7. Tables, Indexes and Constraints
8. Backup and recovery using RMAN
9. Rollback Segments
10. Managing Users
11. Granting and revoking privileges to users
12. Managing roles

Class: B.C.A. T.Y. VI Sem
Course Title: LAB. COURSE – XXVI (**Python Programming**)
Course Code: U-LAC-724

Marks:50
Credit:02

Python Programming Lab

Learning Objective

At the end of the course, the student will be able to:

1. Explain basic principles of Python programming language
2. Implement object oriented concepts
3. Understanding of scripting and the contributions of scripting languages.
4. Understanding of the built-in objects of Python

Course Outcome

After complication of the program student will able:

1. Adapt and combine standard algorithms to solve a given problem (includes numerical as well as non-numerical algorithms)
2. Adequately use standard programming constructs: repetition, selection, functions, composition, modules, aggregated data (arrays, lists, etc.)
3. Explain what a given program (in Python) does
4. Identify and repair coding errors in a program
5. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Proposed Practical List:

1. Create a program that asks the user to enter their name and their age. Print out a message addressed to them that tells them the year that they will turn 100 years
2. old.
3. Enter the number from the user and depending on whether the number is even or odd, print out an appropriate message to the user.
4. Write a program to generate the Fibonacci series.
5. Write a function that reverses the user defined value.
6. Write a function to check the input value is Armstrong and also write the function for Palindrome.
7. Write a recursive function to print the factorial for a given number.
8. Write a function that takes a character (i.e. a string of length 1) and returns True if it is a vowel, False otherwise.
9. Define a function that computes the length of a given list or string.
10. Write a program that takes two lists and returns True if they have at least one common member.
11. Write a Python program to print a specified list after removing the 0th, 2nd, 4th and 5th elements.
12. Write a Python program to clone or copy a list

13. Write a Python script to sort (ascending and descending) a dictionary by value.
14. Write a Python script to concatenate following dictionaries to create a new one.
15. Write a Python program to sum all the items in a dictionary.
16. Design a class that store the information of student and display the same
17. Implement the concept of inheritance using python

Course Title: LAB. COURSE – XXVII (Data Mining)
Course Code: U-LAC-725

Marks:50
Credit:02

Learning Objective:

- Understanding of the value of data mining in solving real-world problems.
- Understanding of foundational concepts underlying data mining.
- Understanding of algorithms commonly used in data mining tools.
- Ability to apply data mining tools to real-world problems..

Course Outcome:

- Display a comprehensive understanding of different data mining tasks and the algorithms most appropriate for addressing them.
- Evaluate models/algorithms with respect to their accuracy.
- Demonstrate capacity to perform a self directed piece of practical work that requires the application of data mining techniques.
- Critique the results of a data mining exercise.
- Develop hypotheses based on the analysis of the results obtained and test them.

Proposed practical list:

Practical based on Unit-I, Unit-II, Unit-III and Unit-IV using weka tool.

Course Title: LAB. COURSE – XXVIII (Programming with TypeScript)
Course Code: U-LAC-726

Marks:50
Credit:02

Learning Objectives:

This course will explain what Typescript is and how we can code a web application using Typescript.

Course Outcome:

After completion of this course, the students can

- Compile, Test and Run TypeScript on workstation
- Use TypeScript classes and type annotations
- Build and run a simple app using TypeScript
- Code a web application using Typescript.

Proposed Practical List

1) Installing and configuring Type Script
2) Working with Datatype and Variable
3) Handling operators
4) Working with decision making statement
5) Working with Looping constructs
6) Creating and using functions
7) Working with parameterized and default parameter function.
8) Working with number functions
9) Handling String and String Methods
10) Creating and using array
11) Creating and using multidimensional array
12) Handling Tuples
13) Creating and using class
14) Handling Inheritance
15) Working with interface.

Course title: Major Project

Course code: U-PRW-641

Max. Marks: 50

Learning objectives

The student will be able to:

- Discover potential research areas in the field of IT
- Identify real world problems and challenges that need IT based solutions
- Demonstrate an ability to work in teams
- Improve the team building, communication and management skills of the students.
- Conduct a survey of several available literature in the preferred field of study
- Use all concepts of IT in creating a solution for a problem
- Formulate and propose a plan for creating a solution for the research plan identified
- Report and present the findings of the study conducted in the preferred domain

Course outcomes

After completing this course, the students will be able to have hands-on to carry out the Project Work using various platforms and project tools which will provide practical experience. Also,

- Implement what is learnt during course
- Get real-life experience by working in real systems
- Understand the problems faced during project implementation.
- Enhance the problem solving ability by solving the real-time problems.
- Learn team work and appreciate role of each of the team members.

Major project Description:

- A team of maximum 3 students can be formed for this project and work together to learn working collaboratively.
- The team can choose the project area from the following:
    - Java based project
    - .Net based project
    - A project consisting analysis of an existing emerging technology based system
    - Network based project
    - Any other project based on IT field
- The team will be assigned an internal guide for the project, who will mentor the team during the project execution.
- The team has to take prior permission from the guide for any project that they have chosen.
- The team needs to report to the guide periodically and inform about the project progress. The timings for the reporting time will be informed at the beginning of the semester.

Major project documentation format:

Acknowledgement

Preface

Index:

1. Project definition
2. Objective and scope of the project
3. Existing system
    a. Introduction
    b. Problem analysis
        i. Study operating problems
        ii. Study informational problems
        iii. Feasibility study
    c. Present system model (Use any design tools / technique)
    d. What's new in the proposed system (if applicable)
4. Proposed system
    a. Functional requirements
    b. Non-functional requirements
    c. Project plan
5. Software requirement analysis and specification
    a. General description
    b. Specific functional and non-functional requirements
6. System design
    a. Proposed system model (Use any design tools / technique)

Development based projects:

7. Development
    a. Source code (for major processes)
8. Implementation
    a. Implementation of the project
    b. Screenshots of the interface
    c. Post-implementation and software maintenance

OR

Analysis based projects:

7. Working outcomes of the existing system
8. Working outcomes of the proposed system
    a. Predicted working outcomes of the proposed system
    b. Comparison of working of proposed system and existing system
09. Technical and managerial lessons learnt
10. Future enhancement
11. References